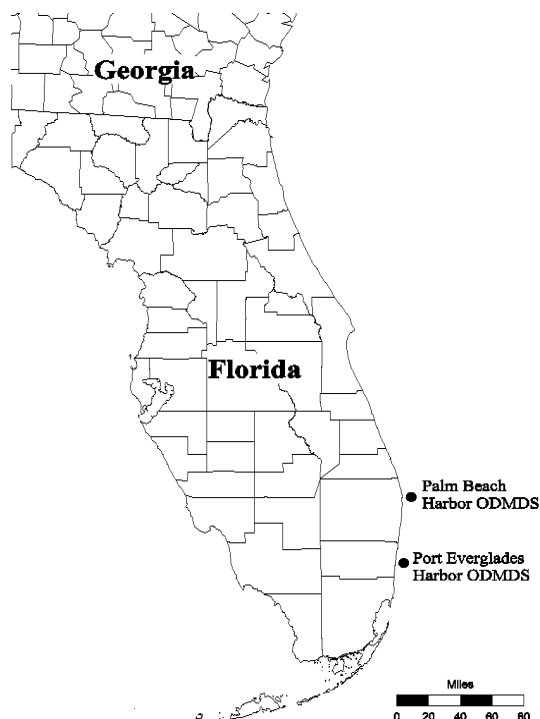


Sections 1.0 - 2.0

# **Final Environmental Impact Statement (FEIS) for Designation of the Palm Beach Harbor Ocean Dredged Material Disposal Site and the Port Everglades Harbor Ocean Dredged Material Disposal Site**

July 2004



**FINAL ENVIRONMENTAL  
IMPACT STATEMENT (FEIS)  
FOR DESIGNATION OF THE  
PALM BEACH HARBOR OCEAN DREDGED MATERIAL  
DISPOSAL SITE AND THE  
PORT EVERGLADES HARBOR OCEAN DREDGED  
MATERIAL DISPOSAL SITE**

**July 2004**

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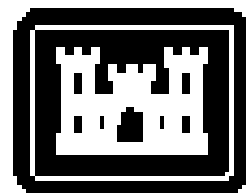
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In cooperation with:

**Army Corps of Engineers**  
**Jacksonville District**  
Jacksonville, Florida

With the assistance of:

**G.E.C., Inc.**  
**Federal Programs Division**  
**Environmental Services**  
Baton Rouge, Louisiana



**FINAL ENVIRONMENTAL  
IMPACT STATEMENT (FEIS)  
FOR DESIGNATION OF THE  
PALM BEACH HARBOR OCEAN DREDGED MATERIAL  
DISPOSAL SITE AND THE  
PORT EVERGLADES HARBOR OCEAN DREDGED  
MATERIAL DISPOSAL SITE**

**U.S. Environmental Protection Agency  
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Comments must be received no later than:

\_\_\_\_\_, 30 days after publication of the notice of availability in  
the Federal Register for the Final EIS.

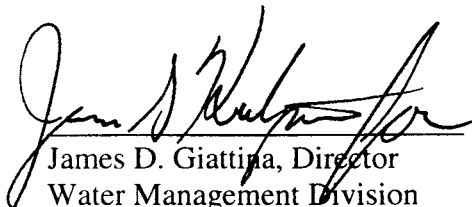
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**FINAL ENVIRONMENTAL IMPACT STATEMENT  
FOR DESIGNATION OF THE  
PALM BEACH HARBOR OCEAN DREDGED MATERIAL  
DISPOSAL SITE AND THE  
PORT EVERGLADES HARBOR OCEAN DREDGED  
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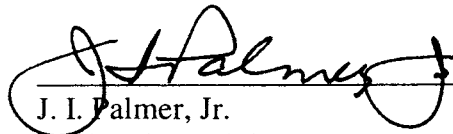
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# TABLE OF CONTENTS

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## TABLE OF CONTENTS

Section	Page
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 Summary .....	1
1.1.1 Major Findings and Conclusions.....	1
1.1.2 Areas of Controversy.....	1
1.1.3 Issues to be Resolved.....	2
1.1.4 List of all Federal Permits, Licenses, and Other Entitlements Prior to Proposal Implementation .....	2
1.1.5 Relationship of Alternative Actions to Environmental Protection Statutes ...	3
1.2 Purpose of and Need for the Action.....	3
1.2.1 Introduction .....	3
1.2.2 National Environmental Policy Act.....	5
1.2.3 Marine Protection, Research, and Sanctuaries Act.....	5
1.2.4 Other Needs .....	6
<b>2.0 ALTERNATIVES CONSIDERED .....</b>	<b>7</b>
2.1 No-Action .....	7
2.2 Non-Ocean Alternative Disposal .....	7
2.3 Alternative Sites.....	8
2.4 EPA Interim-Designated Ocean Dredged Material Disposal Site .....	10
2.5 Considered Alternative ODMDs .....	12
2.5.1 Palm Beach Harbor Preferred Alternative.....	12
2.5.2 Port Everglades Harbor Preferred Alternative.....	12
2.6 Selection of Preferred Alternative.....	13
2.6.1 Palm Beach Harbor.....	13
2.6.2 Port Everglades Harbor .....	14
<b>3.0 AFFECTED ENVIRONMENT.....</b>	<b>14</b>
3.1 General Environmental Setting.....	14
3.2 Geological Characteristics .....	15
3.2.1 Geologic History .....	15
3.2.2 Physiography .....	15
3.2.3 Palm Beach Harbor.....	16
3.2.4 Port Everglades Harbor .....	16
3.3 Threatened or Endangered Species .....	18

## TABLE OF CONTENTS (cont'd)

Section	Page
3.3.1 Palm Beach Harbor.....	22
3.3.2 Port Everglades Harbor .....	22
3.4 Hardgrounds .....	22
3.5 Fish and Wildlife Resources .....	27
3.5.1 Plankton.....	27
3.5.2 Benthos and Nekton .....	28
3.5.3 Palm Beach Harbor.....	29
3.5.4 Port Everglades Harbor .....	30
3.5.5 Comparison with Miami ODMDS .....	32
3.6 Essential Fish Habitat .....	32
3.7 Physical Oceanography.....	34
3.7.1 Tides and Currents.....	34
3.8 Water Quality .....	39
3.8.1 Water Temperature.....	40
3.8.2 Transmissivity .....	40
3.8.3 Salinity Gradients .....	41
3.8.4 Dissolved Oxygen .....	42
3.8.5 Turbidity and Total Suspended Solids .....	42
3.8.6 Trace Metals, Pesticides, and PCBs .....	43
3.8.7 Total Petroleum Hydrocarbons.....	43
3.9 Sediment Quality .....	43
3.9.1 Granulometry.....	43
3.9.2 Total Organic Carbon.....	44
3.9.3 Oil and Grease, TPHs, Pesticides and PCBs .....	44
3.9.4 Metals .....	44
3.9.5 Biototal Characteristics.....	44
3.10 Air Quality .....	44
3.11 Noise .....	44
3.12 Aesthetic Resources .....	45
3.13 Recreation Resources.....	45
3.13.1 Commercial and Recreational Fisheries.....	45
3.13.2 Other Recreation.....	47

## TABLE OF CONTENTS (cont'd)

Section	Page
3.14 Navigation .....	47
3.15 Military Usage .....	47
3.15.1 South Florida Testing Facility .....	57
3.15.2 Existing Features and Planned Expansions .....	57
3.16 Mineral Resources .....	59
3.17 Other Usage .....	59
3.17.1 Subsea Cables .....	59
3.17.2 AES Ocean Express Pipeline Project .....	60
3.17.3 Tractebel Calypso Pipeline Project .....	60
3.17.4 El Paso Seafarer Pipeline Project .....	60
3.18 Candidate Site Surveys .....	61
3.18.1 1986 Video, Still Camera, and Sidescan Sonar Survey, Port Everglades Harbor .....	61
3.18.2 1989 Video Survey, Palm Beach Harbor .....	61
3.18.3 1998 Sediment/Water Quality Survey, Palm Beach and Port Everglades Harbors .....	62
3.18.4 1998 Sidescan Sonar Survey, Palm Beach and Port Everglades Harbors ....	62
<b>4.0 ENVIRONMENTAL EFFECTS.....</b>	<b>64</b>
4.1 Introduction .....	64
4.2 No-Action Alternative .....	64
4.3 Ocean Disposal Alternatives.....	64
4.3.1 Ocean Alternative Sites Not Considered .....	64
4.3.2 Evaluation Using General and Specific Criteria.....	64
4.3.3 General Criteria (40 CFR 228.5) .....	65
4.3.4 Specific Criteria (40 CFR 228.6).....	67
4.3.5 Summary of Specific Criteria Application .....	75
4.3.6 Unavoidable Adverse Environmental Effects and Mitigation Measures .....	75
4.4 Socioeconomic Impacts .....	75
4.5 Cumulative Impacts .....	80
4.5.1 Past Projects.....	80
4.5.2 Current Projects.....	80
4.5.3 Reasonably Foreseeable Future Projects .....	81
4.5.4 Conclusion.....	84



## TABLE OF CONTENTS (cont'd)

Section	Page
4.6 Relationship Between Local Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity .....	84
4.7 Irreversible or Irretrievable Commitment of Resources .....	86
4.8 Relationship of the Proposed Action to Other Federal Projects .....	86
4.9 Essential Fish Habitat .....	87
4.10 Threatened and Endangered Species.....	87
4.11 Hardbottoms .....	88
4.12 Fish and Wildlife Resources .....	88
4.13 Physical Oceanography.....	88
4.14 Water Quality .....	88
4.15 Air Quality .....	89
4.16 Noise .....	89
4.17 Aesthetic Resources .....	90
4.18 Recreation .....	90
4.19 Public Safety .....	90
4.20 Energy Requirements and Conservation.....	90
4.21 Natural or Depletable Resources.....	90
4.22 Scientific Resources.....	91
4.23 Native Americans.....	91
4.24 Reuse and Conservation Potential.....	91
4.25 Urban Quality .....	91
4.26 Solid Waste .....	91
4.27 Drinking Water .....	91
4.28 Indirect Effects.....	91
4.29 Compatibility with Federal, State, and Local Objectives .....	91
4.30 Conflicts and Controversy .....	92
4.31 Uncertain, Unique or Unknown Risks .....	92
4.32 Precedent and Principle for Future Actions .....	92
4.33 Environmental Commitments .....	92
4.34 Compliance with Environmental Regulations .....	92
4.34.1 National Environmental Policy Act of 1969 .....	92
4.34.2 Endangered Species Act of 1973.....	92
4.34.3 Fish and Wildlife Coordination Act of 1958.....	92
4.34.4 Clean Water Act of 1972.....	93
4.34.5 Clean Air Act of 1972 .....	93
4.34.6 Coastal Zone Management Act of 1972.....	93
4.34.7 Farmland Protection Policy Act of 1981 .....	93
4.34.8 Wild and Scenic River Act of 1968.....	93
4.34.9 Marine Mammal Protection Act of 1972.....	93
4.34.10 Estuary Protection Act of 1968 .....	93
4.34.11 Fishery Conservation and Management Act of 1976.....	93
4.34.12 Submerged Lands Act of 1953.....	93
4.34.13 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990.....	93

## TABLE OF CONTENTS (cont'd)

Section	Page
4.34.14 Rivers and Harbors Act of 1899 .....	94
4.34.15 Anadromous Fish Conservation Act .....	94
4.34.16 Migratory Bird Treaty Act of Migratory Bird Conservation Act.....	94
4.34.17 Marine Protection, Research and Sanctuaries Act.....	94
4.34.18 Magnuson-Stevens Fishery Conservation and Management Act.....	94
4.34.19 E.O. 11990, Protection of Wetlands.....	94
4.34.20 E.O. 11988, Flood Plain Management .....	94
4.34.21 E.O. 12898, Environmental Justice .....	94
4.34.22 E.O. 13089, Coral Reef Protection.....	95
<b>5.0 ADDITIONAL REFERENCES .....</b>	<b>95</b>
5.1 Introduction .....	95
5.2 Notice of Intent .....	95
5.3 Scoping Letter .....	95
5.4 Distribution of Draft and Final FEIS .....	96
5.5 Points of Contact.....	98
<b>6.0 LIST OF PREPARERS .....</b>	<b>98</b>
<b>7.0 ADDITIONAL REFERENCES .....</b>	<b>99</b>
<b>8.0 ABBREVIATIONS .....</b>	<b>106</b>
<b>9.0 GLOSSARY .....</b>	<b>108</b>
<b>10.0 CONVERSION FACTORS.....</b>	<b>112</b>
 Appendix A: SCOPING AND RESPONSE LETTERS	
 Appendix B: PUBLIC COMMENTS	
 Appendix C: PALM BEACH HARBOR DISPOSAL AREA STUDY	
 Appendix D: PORT EVERGLADES HARBOR DISPOSAL AREA STUDY	
 Appendix E: SIDESCAN SONAR SURVEY RESULTS AT THE CANDIDATE OCEAN DREDGED MATERIAL DISPOSAL SITES FOR PORT EVERGLADES AND PALM BEACH, FLORIDA	
 Appendix F: BIOLOGICAL ASSESSMENT FOR PALM BEACH HARBOR ODMDS	

## **TABLE OF CONTENTS (cont'd)**

<b>Section</b>	<b>Page</b>
Appendix G: BIOLOGICAL ASSESSMENT FOR PORT EVERGLADES ODMDS	
Appendix H: SEDIMENT AND WATER QUALITY OF CANDIDATE OCEAN DREDGED MATERIAL DISPOSAL SITES FOR PORT EVERGLADES AND PALM BEACH, FLORIDA	
Appendix I: ESSENTIAL FISH HABITAT ASSESSMENT	
Appendix J: USACE ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC), WATER EXPERIMENT STATION (WES) WAVE INFORMATION STUDY (WIS) SOUTH ATLANTIC REGION	
Appendix K: DISPERSION CHARACTERISTICS FOR PALM BEACH AND PORT EVERGLADES OCEAN DREDGED MATERIAL DISPOSAL SITES (ODMDSs)	
Appendix L: SITE MANAGEMENT AND MONITORING PLANS	
Appendix M: WATER EXPERIMENT STATION PORT EVERGLADES/ PALM BEACH DREDGED MATERIAL FATE STUDIES	
Appendix N: COASTAL ZONE CONSISTENCY EVALUATION REPORT	

## LIST OF TABLES

Number		Page
1	Relationship of Alternatives to Environmental Requirements .....	4
2	Quantity Breakdown for Port Everglades Draft GRR .....	6
3	List of Threatened or Endangered Species that Might be Found in the Vicinity of the Proposed Palm Beach Harbor and Port Everglades Harbor ODMDSs.....	19
4	List of Candidate Species that Might be Found in the Vicinity of the Proposed Palm Beach Harbor and Port Everglades Harbor ODMDSs.....	20
5	Faunal Assemblage Comparison by Site .....	33
6	Species and Highly Migratory Species Managed by the South Atlantic Fishery Management Council.....	34
7	Essential Fish Habitat and Habitat Areas of Particular Concern Identified for Management by the South Atlantic Fishery Management Council .....	35
8	Summary of Wave Information in the Vicinity of Project Sites .....	37
9	East/West Velocity Components in the Vicinity of the Project Sites.....	38
10	North/South Velocity Components in the Vicinity of the Project Sites .....	38
11	Velocities Simulated in Fate Studies .....	39
12	Average Water Temperatures at Palm Beach and Port Everglades Candidate Sites.....	41
13	Average Dissolved Oxygen Trend at Palm Beach and Port Everglades Candidate Sites .....	42
14	Grain Size Composition and Mean Grain Size of Samples.....	43
15	Migratory Behavior of Some Coastal Nekton Common to Coastal Florida.....	46
16	Artificial Reef Locations in the Vicinity of the Proposed Palm Beach Harbor ODMDS .....	48
17	Artificial Reef Locations in the Vicinity of the Proposed Port Everglades Harbor ODMDS .....	52
18	Geographic Position, Water Depth, Bottom Topography and Distance from Coast of ODMDSs .....	68
19	Summary of the Specific Criteria as Applied to the Preferred and Candidate Ocean Dredged Material Disposal Sites for Palm Beach Harbor .....	76

**LIST OF TABLES (cont'd)**

<b>Number</b>		<b>Page</b>
20	Summary of the Specific Criteria as Applied to the Preferred and Candidate Ocean Dredged Material Disposal Sites for Port Everglades Harbor .....	78
21	Wastewater Ocean Outfalls in the Vicinity of Palm Beach Harbor .....	91
22	Wastewater Ocean Outfalls in the Vicinity of Port Everglades Harbor .....	91

## LIST OF FIGURES

Number		Page
1	Alternative Site Location Map, Palm Beach Harbor ODMDS .....	9
2	Alternative Site Location Map, Port Everglades ODMDS.....	11
3	Project Area Bathymetry .....	17
4	Atlantic Coast Continental Shelf Habitat .....	24
5	Project Area Hardbottom Habitat.....	25
6	Artificial Reef Structures in the Vicinity of Palm Beach Harbor ODMDS .....	51
7	Artificial Reef Structures in the Vicinity of Port Everglades ODMDS .....	56
8	Existing SFTF Range and Proposed SFOMC Expansion .....	58

# **FINAL ENVIRONMENTAL IMPACT STATEMENT**

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## **1.0 INTRODUCTION**

### **1.1 Summary**

#### **1.1.1 Major Findings and Conclusions**

The U.S. Environmental Protection Agency (EPA) with the cooperation of the U.S. Army Corps of Engineers (USACE), Jacksonville District, investigated alternative ocean dredged material disposal sites off the east coast of Florida, one to accommodate Palm Beach Harbor and one to accommodate Port Everglades Harbor. The purpose of this investigation was the final designation of an Ocean Dredged Material Disposal Site (ODMDS) for each location. The environmental amenities in the vicinity of each alternative site were investigated to determine the suitability of each location as an ODMDS. The physical, chemical, and biological characteristics of each site were examined. The fate of dredged materials dispersants from each site was considered. Non-ocean alternatives for dredged material disposal were also evaluated.

Investigations showed that the preferred ODMDSs for Palm Beach Harbor and Port Everglades Harbor were the alternative sites located 4.5 and 4 nautical miles (nmi) offshore, respectively. The preferred sites (each approximately 1 square nmi (3.4 square kilometers [km<sup>2</sup>])) consist of primarily soft-bottom habitat. Each site is located on the upper continental slope on the western edge of the Florida Current. The depth of each site exceeds 150 meters (m) (492 feet [ft]). Based on EPA and USACE surveys, it was concluded that no natural reefs, no natural or cultural features of historical importance, and no areas of special scientific importance are located within or near the preferred sites. Each site meets all evaluation criteria for use as an ODMDS. The conclusion is that the preferred sites are suitable for designation for disposal of dredged material.

#### **1.1.2 Areas of Controversy**

A scoping letter on the Port Everglades Harbor ODMDS designation dated April 17, 1995, was sent by the USACE to Federal, State, and local governmental offices and agencies and other concerned entities. Eleven letters were received in response to that letter from surrounding businesses and state agencies. A second scoping letter for the Palm Beach Harbor ODMDS designation dated September 26, 1997 was sent by the USACE to Federal, State, and local government offices and agencies and other concerned entities. Three letters were received in response to that letter. Copies of the original scoping letters and response letters are appended to this document (Appendix A).

The areas of controversy identified during the scoping process included proximity to nearshore reefs and the potential for transport of fine-grained material to these reefs; proximity to other significant marine resources; the recency and adequacy of the designation surveys; the scope, frequency, and costs of monitoring effects of disposal at the proposed sites; potential conflicts with the South Florida Testing Facility (SFTF); and the potential for reductions in beneficial use projects such as beach nourishment due to the availability of an offshore disposal option.

The USACE has sponsored modeling of the dispersion of disposed dredged material in order to address concerns about impacts to nearby hardbottom and reef communities. EPA conducted additional designation surveys to identify any significant marine resources in the vicinity of the candidate sites and to characterize the sites. One of the Port Everglades Harbor alternative ODMDSs was moved to avoid the SFTF. Draft Site Management and Monitoring Plans (see Appendix L) has



been developed to establish a framework for the scope, frequency, and cost management of monitoring the effects of disposal at the candidate sites.

### **1.1.3 Issues to be Resolved**

The issues of potentially reducing the opportunity for beneficial use of the dredged material, such as beach nourishment and placement, due to the availability of ocean disposal have yet to be completely resolved. Resolution of this issue is beyond the scope of this action. The Federal Standard is defined as the least costly dredged material disposal or placement alternative identified by the USACE that is consistent with sound engineering practices and meets all Federal environmental requirements. Establishing the Federal Standard is not the same as selecting a disposal alternative, but rather establishes a base plan which defines the disposal or placement cost assigned to the navigation purpose of the project. When material meets the standards for beach placement, beach placement is likely to be the Federal Standard, and the federal share for beach placement will be 100%. However, if some of the material does not meet the standards for beach placement or for other reasons beneficial use is not the base plan, the USACE has various legislative authorities to share the incremental costs of the beneficial use or beach placement above the base plan. This base plan may or may not be ocean disposal. EPA and the USACE strongly support beneficial use projects. However, in some cases, beneficial uses will not be available and ocean disposal will be needed. The success of beneficial use projects depends on the creation of partnerships between Federal and non-Federal interests and requires local leadership and local financial commitments to succeed. The National Dredging Team and Regional Dredging Teams co-chaired by EPA and the USACE have been formed in part to promote these partnerships.

Essential fish habitat (EFH) consultation has not been completed (see Section 3.6). NOAA Fisheries raised a number of concerns related to potential impacts of site designation on EFH. EPA has prepared an EFH Assessment for each ODMDS (see Appendix I) and is still in the consultation process. Site designation will not be finalized until the EFH consultation has been completed.

### **1.1.4 List of all Federal Permits, Licenses, and Other Entitlements Prior to Proposal Implementation**

In 1972, Congress enacted the Marine Protection, Research, and Sanctuaries Act (MPRSA). The MPRSA controls the transportation and the subsequent dumping of materials into ocean waters. The Act disallows the dumping of materials into the ocean except in accordance with permits issued by EPA. In the case of dredged material, permits allowing dumping activities are issued by the USACE. Permits are issued pursuant to criteria required under Section 103 (a) of the MPRSA. However, the primary users of the sites will be the Federal projects of maintenance dredging in Palm Beach and Port Everglades harbors and permits are not issued for Federal projects. A process of coordination and concurrence was conducted through the distribution of the Draft Environmental Impact Statement (DEIS) for this proposed action to Federal and Florida state agencies, offices, and organizations having authority over issues associated with this action. The Final Environmental Impact Statement (FEIS) includes letters of concurrence, recommendations, or approvals from all cooperating entities (Appendix B).

### **1.1.5 Relationship of Alternative Actions to Environmental Protection Statutes**

The relationship of the alternative actions to environmental protection statutes and other environmental requirements is presented in Table 1.

## **1.2 PURPOSE OF AND NEED FOR THE ACTION**

### **1.2.1 Need for Action**

The proposed action addressed in this DEIS is the designation by EPA of two environmentally acceptable and economically feasible ODMDSs in the Atlantic Ocean, one located east of the Lake Worth Inlet and Port of Palm Beach, Florida, and one located east of Port Everglades, Florida. The purpose of these ODMDSs is to accommodate maintenance-dredged material from both the Palm Beach Harbor Federal Project and the Port Everglades Harbor Federal Project. The need for ocean disposal is based primarily on the lack of economically, logistically, and environmentally feasible alternatives for the disposal of the projected quantities of dredged material deemed unsuitable for beach re-nourishment or beach placement. Cost comparisons of ocean and non-ocean disposal of the dredged material based on environmental, engineering, and economic criteria were conducted for the areas of Palm Beach Harbor (Appendix C) and Port Everglades Harbor (Appendix D).

#### **Palm Beach Harbor**

Currently, there exists a need for disposal of maintenance material from the Palm Beach Harbor turning basin. Maintenance dredging of the turning basin, which contains non-beach quality material, is needed on a frequency of every three years (see Appendix C). Dredged material volumes will vary from dredging event to dredging event depending on the amount of shoaling. Shoaling rates for the turning basin are projected to average 10,300 cy per year (Appendix C). However, during years when the turning basin is dredged, material from the inner channel and entrance channel, which is typically dredged annually and placed on the beach, will likely also be disposed with the turning basin material in the ocean. Total disposal volumes (turning basin and entrance channel) for the years in which the turning basin is dredged (and hence ocean disposal is needed) are expected to average in the range of 75,000 to 100,000 cy with volumes as large as 200,000 cy (Murphy, 2004). Disposal volumes of 75,000 to 100,000 cy every three years equates to annual averages of 25,000 to 35,000 cy. Placement of beach quality sand on the beach or other beneficial use rather than in the ocean during these routine maintenance events is subject to the suitability of the material for the beneficial use (see Section 2.2) and any agreements established under the various legislative authorities which authorize cost sharing for the incremental cost of the beneficial use or beach placement.

#### **Port Everglades Harbor**

Currently, there exists a need for disposal of maintenance material from Port Everglades Harbor. Annual shoaling rates at Port Everglades Harbor have been estimated at 16,500 cy per year for the turning basin (Appendix D) and 15,600 cy for the entrance channel (Olsen & Assoc., 2003) for a total of approximately 30,000 cy per year. Dredging frequency has ranged from 6 to 20 years with project volumes in the range of 26,000 to 144,000 cy (Brodehl, 2003). The infrequent dredging has been due to the lack of available disposal options; with an available ocean disposal site, the frequency is expected to increase to every 3 to 5 years (Brodehl, 2004). Some or all of the maintenance material may be placed on the beach or utilized for other beneficial use when possible. However, placement of beach quality sand on the beach or other beneficial use is subject to the suitability of the material for the beneficial use (see Section 2.2), the need for the material, the cost relative to ocean disposal, and any agreements established under the various

**Table 1. Relationship of Alternatives to Environmental Requirements**

<b>Federal Statutes</b>	<b>No Action</b>	<b>Proposed Palm Beach ODMDS</b>	<b>Proposed Port Everglades ODMDS</b>
Archeological & Historic Preservation Act, as amended, 16 USC 469, <i>et seq.</i> PL 93-291	FC	FC	FC
Clean Air Act, as amended, 42 USC 1857h-7, <i>et seq.</i> PL 91-604	FC	FC	FC
Clean Water Act, as amended, (Federal Water Pollution Control Act) 33 USC 1251, <i>et seq.</i> PL 92-500	FC	FC	FC
Coastal Barrier Resources Act, 16 USC 3501 <i>et seq.</i> PL 97-348	NA	NA	NA
Coastal Zone Management Act, as amended, 16 USC 1451, <i>et seq.</i> PL 92-583	FC	FC	FC
Endangered Species Act, as amended, 16 USC 1531, <i>et seq.</i> PL 93-205	FC	FC	FC
Estuary Protection Act, 16 USC 1221, <i>et seq.</i> PL 90-454	NA	NA	NA
Federal Water Project Recreation Act, as amended, 16 USC 460-1(12), <i>et seq.</i> PL 89-72	FC	FC	FC
Fish and Wildlife Coordination Act, as amended, 16 USC 661, <i>et seq.</i> PL 85-624	FC	FC	FC
Land and Water Conservation Fund Act, as amended, 16 USC 4601-1601-11, <i>et seq.</i> PL 88-578	FC	FC	FC
Magnuson-Stevens Fishery Conservation and Management Act, as amended, 16 U.S.C. 1801, <i>et seq.</i> PL 94-265	FC	FC	FC
Marine Mammal Protection Act 16 USC 1361, <i>et seq.</i> PL 92-522	FC	FC	FC
Marine Protection, Research, and Sanctuaries Act, 33 USC 1401, <i>et seq.</i> PL 92-532	FC	FC	FC
National Historic Preservation Act, as amended, 16 USC 470a, <i>et seq.</i> PL 89-655	FC	FC	FC
National Environmental Policy Act, as amended, 42 USC 4321, <i>et seq.</i> PL 91-190	FC	FC	FC
River and Harbor Act, 33 USC 401, <i>et seq.</i>	FC	FC	FC
Watershed Protection and Flood Prevention Act, 16 USC 1001, <i>et seq.</i> PL 83-566	NA	NA	NA
Wild and Scenic Rivers Act, as amended, 16 USC 1271, <i>et seq.</i> PL 90-542	NA	NA	NA
<b>Executive Orders</b>			
Coral Reef Protection (EO 13089)	FC	FC	FC
Floodplain Management (EO 11988)	NA	NA	NA
Protection of Wetlands (EO 11990)	NA	NA	NA
Protection and Enhancement of Environmental Quality (EO 11514, as amended EO 11991)	FC	FC	FC
Protection and Enhancement of the Cultural Environment (EO 11593)	NA	NA	NA
Federal Compliance with Pollution Control Standards	FC	FC	FC
<b>State Policies</b>			
Florida Coastal Management Program	FC	FC	FC

FC= Full Compliance NA= Not Applicable

legislative authorities which authorize cost sharing for the incremental cost of the beneficial use or beach placement.

### **1.2.2 National Environmental Policy Act**

The National Environmental Policy Act (NEPA) of 1969, as amended, requires the preparation of an Environmental Impact Statement (EIS) for major Federal actions that may significantly affect the quality of the human environment. This EIS implements EPA policy of voluntarily preparing NEPA documents (FR Doc. 98-29019 [29 October 1998]) as part of the designation process of an ODMDS under Section 102 of the Marine Protection, Research, Sanctuaries Act (MPRSA) of 1972. This EIS will satisfy the USACE need for NEPA documentation relating to ocean disposal site suitability for permitting under Section 103 of the MPRSA. Suitability of any proposed dredged material for ocean disposal will be determined on a case-by-case basis.

### **1.2.3 Marine Protection, Research, and Sanctuaries Act**

The transportation and disposal of dredged material in ocean waters, including the territorial sea, is regulated under the MPRSA (Public Law 92-532, 86 Stat. 1052, 33 U.S.C. §§1041 *et seq.*) as amended by Title V of the Water Resources Development Act of 1992 (WRDA 92; Public Law 102-580). Section 102(a) of the MPRSA authorizes EPA to establish and apply regulations and criteria for ocean dumping activities. Consequently, EPA issued in October, 1973, and revised in January, 1977, Ocean Dumping Regulations and Criteria (40 CFR 220-229). These regulations establish control of ocean dredged material disposal primarily by two activities, designation of sites for ocean dumping and the issuance of permits for dumping.

MPRSA Section 102(c), authorizes EPA to designate recommended sites for ODMDSs. An ODMDS is a precise geographical area within which ocean disposal of dredged material is permitted or authorized under conditions specified in MPRSA Sections 102 and 103. The primary purpose of site designation is to select sites that minimize adverse environmental effects and minimize the interference of dumping activities with other uses of the marine environment. The designation of an ODMDS by EPA is based on compliance with general (Part 228.5) and specific (228.6[a]) site evaluation criteria. Final site designation under Section 102(c) must be based on environmental studies of each site and on historical knowledge of the impact of dredged material disposal on areas similar to such sites in physical, chemical, and biological characteristics. EPA has the primary responsibility for site designation. A site may be selected by the USACE under MPRSA Section 103(b), with EPA concurrence, if no EPA-designated site is available.

The transportation of dredged material for the purpose of disposal into ocean waters (i.e., the actual use of the designated site) is permitted by the USACE (or authorized in the case of federal projects) under MPRSA Section 103(e) applying environmental criteria established in EPA's Ocean Dumping Regulations and Criteria. MPRSA Section 104(a)(3) provides that ocean disposal of dredged material can occur only at a designated site and Section 103(b) requires the USACE to utilize dredged material disposal sites designated by EPA to the maximum extent feasible. Prior to issuing a dredged material permit or authorizing a federal project involving the ocean disposal of dredged material, the USACE must notify EPA, who may disapprove the proposed disposal.

#### 1.2.4 Other Needs

The USACE anticipates that the new ODMDSs offshore from Palm Beach Harbor and Port Everglades Harbor will be used initially for the disposal of suitable maintenance-dredged material from the existing Palm Beach Harbor and Port Everglades Harbor Federal Navigation Projects, respectively. The sites may also be used for other Federal or private dredging projects near Palm Beach Harbor and Port Everglades Harbor, provided the dredged material meets the criteria specified in the MPRSA. Additional testing of dredged material and NEPA documentation would also be required for the transportation of dredged material. Only suitable dredged material (dredged material that meets EPA Ocean Dumping Criteria [40 CFR 220-229]) would be placed in the site. A need for use of the proposed ODMDSs must also be shown for all dredging activities.

Potential projects and their associate disposal volumes for each proposed ODMDS are provided below.

##### **Palm Beach Harbor**

Up to 1,000,000 cy of suitable material may be placed at the ODMDS in 2007 as a result of proposed construction dredging. This construction dredging has been proposed at the recommendation of a recent reconnaissance study by the USACE which stated that deepening of the existing Federal project at Palm Beach Harbor was justified. The USACE will perform a feasibility study to examine the plan in greater detail and evaluate disposal alternatives.

Additional volumes that may be placed at the Palm Beach Harbor ODMDS include 9,000 cy from the North Turning Basin Extension (cited in the August 1984 Feasibility Report).

##### **Port Everglades Harbor**

Additional volumes of material resulting from proposed construction activities are presented in Table 2.

**Table 2. Quantity Breakdown for Port Everglades Draft GRR (In Development)**

<b>Contract</b>	<b>Component</b>	<b>Fiscal Year</b>	<b>Quantity</b>
1	Widener	2006	770,000
	Dania Cutoff Canal	2007-	1,945,000
	Turning Notch	2008	372,000
	Subtotal		3,087,000
2	Outer Entrance Channel	2009	872,000
	Inner Entrance Channel	2009	390,000
	Main Turning Basin	2010	1,476,000
	South Turning Basin	2011	322,000
	Subtotal		3,060,000
3	Southport Access Channel	2012	1,232,400
	<b>Total New Work Quantity for Disposal</b>		<b>7,379,400</b>
---	Maintenance - Non Federal	2024	40,000
	Maintenance - Federal	2024	660,000
	Total Maintenance Quantity for Disposal		700,000
	<b>Total Quantity for Disposal</b>		<b>8,079,400</b>

Source: USACE, 2004.

The above quantities include Drilling and Blasting, Mechanical Dredging, and Pipeline Dredging Volumes for Channels and Berths from Draft General Re-Evaluation Report Micro Computer-Aided Cost Engineering System (GRR MCACES). This estimate also includes volumes associated with revisions made for the June 2003 ship simulation study. These quantities are estimates and are subject to change depending on further revisions of channel designs, updated bathymetric information, and/or revision of techniques used to calculate volumes. The assignment of components to individual contracts (phases) and the dates associated with each phase were determined based on limitations of the upland disposal sites. These are subject to change if the ODMDS becomes a viable option for disposal.

## **2.0 ALTERNATIVES CONSIDERED**

### **2.1 No-Action**

The No-Action Alternative is defined as not designating an ODMDS pursuant to Section 102 of the MPRSA for Palm Beach Harbor and Port Everglades Harbor. The No-Action Alternative would not provide an acceptable EPA-designated disposal sites for use by the USACE or other entities for the disposal of dredged material. Without final-designation disposal sites, the maintenance of the existing Federal Navigation Projects at Palm Beach Harbor and Port Everglades Harbor would be adversely impacted with subsequent effects upon the local and regional economies. Interim designated ODMDSs are not available (see discussion under 2.4). Alternative dredged material disposal methods would be required or the dredging and dredged material disposal would have to be discontinued.

In the absence of a designated ODMDS, the USACE could select an alternative pursuant to Section 103 of MPRSA. In this case, the ocean site selected for disposal would be evaluated according to the criteria specified in Section 102(a) of the MPRSA and EPA's Ocean Dumping Regulation and Criteria 40 CFR Part 228, and EPA concurrence is required. A site so selected can be used for five years without EPA designation, and can continue to be used for another five years if:

- No feasible disposal site has been designated;
- Use of the alternative site is necessary to maintain navigation and interstate commerce; and
- EPA determines continued site use does not pose an unacceptable risk to human health, aquatic resources, or the environment.

Accordingly, the No-Action Alternative would not provide a long-term management option for dredged material disposal.

### **2.2 Non-Ocean Alternative Disposal**

Alternatives to ocean disposal are considered, as required by Section 103 of the MPRSA, and include upland disposal and beach re-nourishment. Cost effective upland disposal options are not available in the intensively developed areas around Port of Palm Beach and Port Everglades (see appendices C and D, respectively). Many of the potential upland disposal sites were considered environmentally valuable in their own right, and none of them or combination of them was more cost-effective than ocean disposal. As a result, land disposal is not a viable option for the placement of dredged materials from the Palm Beach Harbor and Port Everglades Harbor Federal Navigation Projects.

Beach re-nourishment of suitable dredged material is the preferred disposal alternative for all dredging projects. Only beach quality material may be used in beach re-nourishment projects. The State of Florida's Beach Management Rule, Chapter 62B-41.007, Subsections 5(j)-5(k) defines beach quality material as material that maintains the general character and functionality of material occurring on a beach and in adjacent dunes and coastal systems. Such material is predominantly carbonate, quartz, or other similar material with a particle size distribution ranging from 0.062 millimeters (mm) and 4.76 mm, must be similar in color and grain size distribution to existing material at the placement site, and must not contain any of the following:

- Greater than 5 percent (%), by weight, silt, clay, or colloids passing the #230 sieve;
- Greater than 5%, by weight, fine gravel retained on the #4 sieve;
- Coarse gravel, cobbles, or material retained on the ¾-inch sieve in a percentage or size greater than that of material on the native beach;
- Construction debris, toxic material, or other foreign matter; and
- Any materials or characteristics that would result in cementation on the beach.

Sandy sediment derived from the maintenance of coastal navigation channels is deemed suitable for beach placement with up to 10% fine material passing the #230 sieve, provided that it meets the above criteria and appropriate water quality standards. Such material containing 10-20% fine material passing the #230 sieve and meeting all other sediment and water quality standards is considered suitable for placement on nearshore portions of beaches.

As some of the dredged material at the Port Everglades Harbor and Palm Beach Harbor may not always meet these criteria, alternative disposal options to beach re-nourishment or placement are needed.

## **2.3 Alternative Sites**

In the nearshore areas of Palm Beach Harbor and Port Everglades Harbor, hard bottom habitats supporting coral/algal and worm reef communities are concentrated on the continental shelf. Disposal operations on the shelf could adversely impact these reef habitats. The outer continental shelf is narrow near the proposed sites, with a width of about 0.63 nmi (1.17 kilometer [km]) at Port of Palm Beach and 0.63 nmi (1.16 km) at Port Everglades (Uchupi, 1968). Consequently, the transport of dredged materials for disposal beyond the shelf is both practical and economically feasible.

Alternative sites considered for the Port of Palm Beach include the offshore interim site, the 3-mile site, the 4.5-mile site and the 9-mile site (Figure 1). The interim and 4.5-mile sites are approximately one square mile in size. The 3-mile site is four square miles in size. The 9-mile site was originally one square mile in size, but was subsequently increased to approximately four square miles based on deposition modeling to insure that most of the material deposits within the disposal site boundaries. The 3-mile site was dropped from further consideration in favor of the 4.5-mile site as it was determined that a four square mile site was not necessary. Note that the deeper depths at the 9-mile site result in a larger disposal footprint necessitating the larger disposal site. The distances to shore of the various alternatives are summarized below:





Palm Beach Harbor Alternatives	Distance from shore to western edge of site
Offshore Interim Site	2.9 nautical miles
3-Mile Candidate Site	3.3 nautical miles
4.5-Mile Site (Preferred)	4.3 nautical miles
9-Mile Candidate Site	8 nautical miles

The 4.5-mile and 9-mile sites have been carried forward for detailed analysis with the 4.5-mile site as the preferred alternative. The interim site is discussed further in the following section.

Alternative sites considered for the Port of Port Everglades include the interim site, the 4-mile site and the 7-mile site (Figure 2). The interim and 4-mile sites are approximately one square mile in size. The 7-mile site was originally one square mile in size, but was subsequently increased to approximately four square miles based on deposition modeling to insure that most of the material deposits within the disposal site boundaries. The distances to shore of the various alternatives are summarized below:

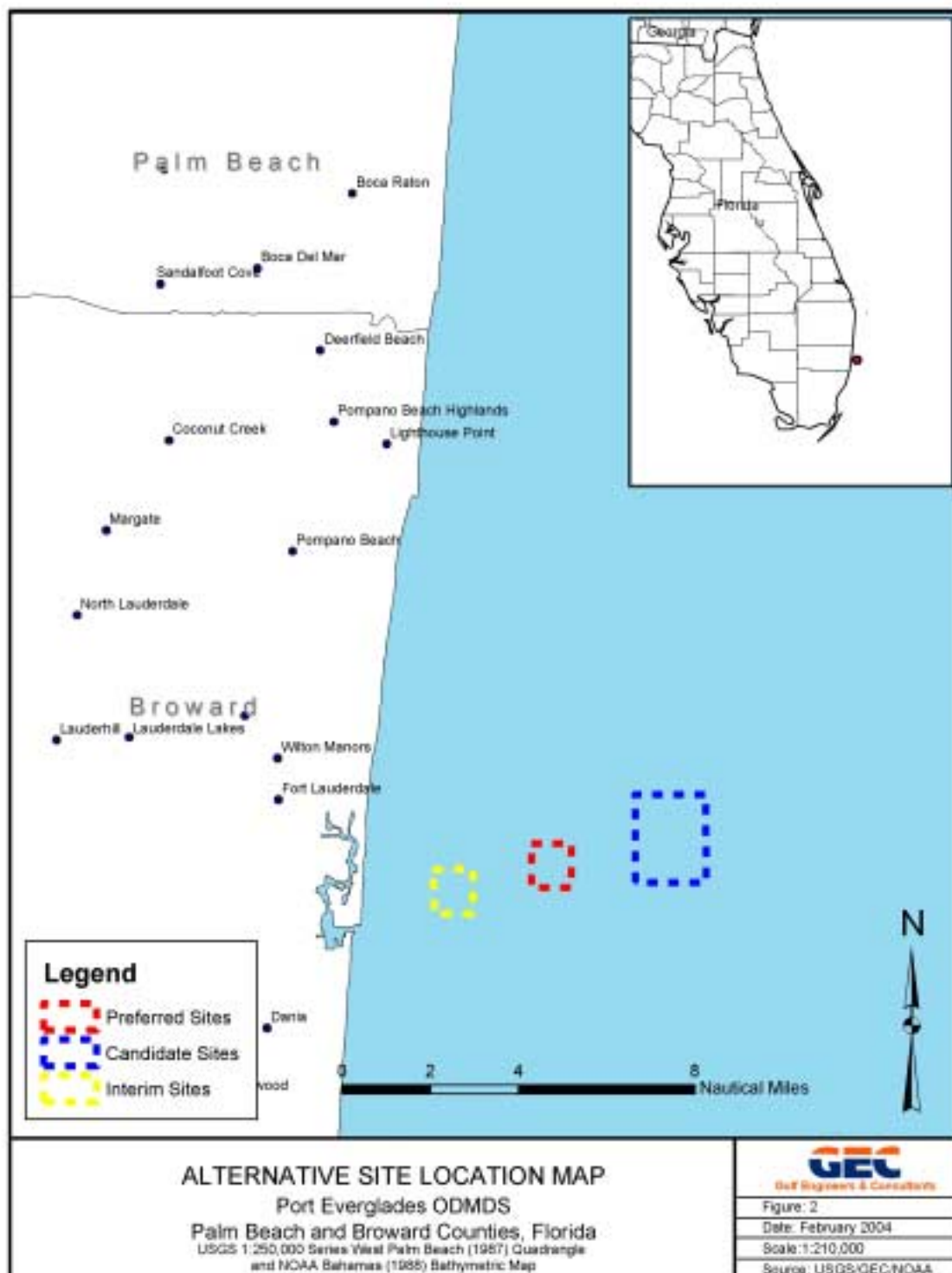
Port Everglades Harbor Alternatives	Distance from shore to western edge of site
Interim Site	1.6 nautical miles
4-Mile Site (Preferred)	3.8 nautical miles
7-Mile Candidate Site	6 nautical miles

The 4-mile and 7-mile sites have been carried forward for detailed analysis with the 4-mile site as the preferred alternative. The interim site is discussed further in the following section.

## **2.4 EPA Interim-Designated Ocean Dredged Material Disposal Site**

Interim-designated ocean disposal sites have historically been used for the disposal of dredged material from Palm Beach Harbor and Port Everglades Harbor. Two interim sites were designated for Palm Beach Harbor, one of which is located nearshore at the port entrance, with the other located approximately 2.9 nmi (4.5 km) offshore. The nearshore interim site was not considered an alternative for final designation. Use of these sites was discontinued as a result of the implementation of the WRDA of 1992. WRDA 92 prohibited after January 1, 1997 issuance of any permit or MPRSA Section 103(e) authorization for an EPA ODMDS which does not have a final designation. Following discussions with the State of Florida, a zone of siting feasibility was established eliminating from consideration any areas within 3 nmi (4.5 km) of shore to avoid direct impact to natural reefs in the area. As a result, both Palm Beach Harbor interim sites were not considered further.

The interim site for Port Everglades Harbor is located 1.7 nmi (3.2 km) offshore. A 1984 survey conducted by EPA indicated that some damage to nearby inshore, hard bottom areas may have occurred due to the movement of fine material associated with disposed dredged material. In light of the survey findings, disposal at the Port Everglades Harbor interim site was discontinued and the site was eliminated from further consideration.



## **2.5 Considered Alternative ODMDs**

The proposed action is the designation of new ODMDs for the areas of Palm Beach Harbor and Port Everglades Harbor. These sites were evaluated and selected with the full cognizance of the five general and 11 specific site selection criteria set forth in 40 CFR 228.5 and 228.6 (Ocean Dumping Criteria). The extent to which these candidate sites meet the criteria is addressed in Section 4.3.2, *Evaluation Using General and Specific Criteria*, of this document.

### **2.5.1 Palm Beach Harbor**

#### **4.5-Mile Site (Preferred Site)**

The preferred site near Palm Beach Harbor proposed for ODMD designation is an area approximately one square nmi (3.4 km<sup>2</sup>) located east northeast of the Lake Worth Inlet and approximately 4.5 nmi (8.3 km) offshore (see Figure 1). The preferred site for this new ODMD near Palm Beach Harbor is defined by the following boundary coordinates (NAD 83):

(NW)	26°47'30" N	79°57'09" W
(NE)	26°47'30" N	79°56'02" W
(SW)	26°46'30" N	79°57'09" W
(SE)	26°46'30" N	79°56'02" W

The site is centered at 26°47'00" N, 79°56'35" W. Depths in the site range from 525 ft (160 m) to 625 ft (190 m).

#### **9-Mile Candidate Site**

The 9-mile site is also considered a candidate site for ODMD designation. The site is located approximately 9 nmi (16.7 km) offshore (see Figure 1). The 9-mile site is defined by the following boundary coordinates (NAD 83):

(NW)	26°45'00" N	79°53'00" W
(NE)	26°45'00" N	79°51'00" W
(SW)	26°47'00" N	79°53'00" W
(SE)	26°47'00" N	79°51'00" W

The site is centered at 26°46'00" N, 79°52'00" W. Depths in the site range from 855 ft (260 m) to 985 ft (300 m).

### **2.5.2 Port Everglades Harbor**

#### **4-Mile Site (Preferred Site)**

The preferred site at Port Everglades Harbor proposed for ODMD designation is an area approximately one square nmi (3.4 km<sup>2</sup>) located east northeast of Port Everglades and approximately 4 nmi (7.4 km) offshore (see Figure 2). The preferred site for this new ODMD at Port Everglades Harbor is defined by the following boundary coordinates (NAD 83):

(NW)	26°07'30" N	80°02'00" W
(NE)	26°07'30" N	80°01'00" W
(SW)	26°06'30" N	80°02'00" W
(SE)	26°06'30" N	80°01'00" W

The site is centered at 26°07'00" N, 80°01'30" W. Depths in the site range from 640 ft (195 m) to 705 ft (215 m).

## **7-Mile Candidate Site**

The 7-mile site is also considered a candidate site for ODMDS designation. The site is located approximately 7 nmi (13.0 km) from offshore (see Figure 2). The 7-mile site is defined by the following boundary coordinates (NAD 83):

(NW)	26°06'30" N	79°57'30" W
(NE)	26°06'30" N	79°59'30" W
(SW)	26°08'30" N	79°59'30" W
(SE)	26°08'30" N	79°57'30" W

The site is centered at 26°07'30" N, 79°58'30" W. Depths in the site range from 785 ft (240 m) to 920 ft (280 m).

## **2.6 Selection of Preferred Alternative**

The characteristics of the alternative sites with respect to EPA's five general (40 CFR 228.5) and 11 specific (40 CFR 228.6) criteria for site selection are compared in sections 4.3.2 through 4.3.5.

These comparisons are used as the basis for selection of the preferred alternatives. Detailed information on the physical, biological, and socioeconomic environment and potential impacts of the proposed action are presented in chapters 3 and 4.

### **2.6.1 Palm Beach Harbor Preferred Alternative**

Based on comparison of the alternative sites to the general and specific criteria, the 4.5-mile site was selected by EPA and the USACE as the preferred alternative. This site was selected for the following reasons:

- Sediment surveys of the site indicate that sediments within the 4.5-mile and 9-mile sites are similar to the dredged material proposed for disposal.
- No significant impacts to resources or amenity areas (e.g., offshore coral reefs) are expected to result from designation of either the 4.5-mile or 9-mile site.
- Potential impacts to surface and mid-water dwelling organisms are expected to be insignificant regardless of which of the alternative sites is used for dredged material disposal.
- Potential impacts to bottom-dwelling organisms are considered significant at either of the considered alternative sites. However, the area of impact is expected to be greater at the 9-mile site due to the greater footprint of disposed dredged material at this site. The 9-mile site would require a four square nmi site to contain the footprint of the disposal mound within the site boundaries compared to a one square nautical mile site for the 4.5-mile site.

- Designation of the 4.5-mile site would require significantly less consumption of resources (e.g., fuel, federal dollars) than the 9-mile site for transportation of dredged material for disposal.
- Designation of the 4.5-mile site would result in significantly less air emissions from the disposal vessel than the 9-mile site.
- Monitoring of the 4.5-mile site would be less costly and less difficult than monitoring the 9-mile site due to the 9-mile site's greater depths and distance from shore.

## **2.6.2 Port Everglades Harbor Preferred Alternative**

Based on comparison of the alternative sites to the general and specific criteria, the 4-mile site was selected by EPA and the USACE as the preferred alternative. This site was selected for the following reasons:

- Sediment surveys of the site indicate that sediments within the 4-mile site are similar to the dredged material proposed for disposal. Sediments in the northern portion of the 7-mile site are also sandy and similar to proposed dredged material. However, the southern portion of the 7-mile site consists of low relief limestone hard bottom. Disposal of dredged material in this area would result in a significant change in the benthic characteristics.
- No significant impacts to resources or amenity areas (e.g., offshore coral reefs) are expected to result from designation of either the 4-mile or 7-mile site.
- Potential impacts to surface and mid-water dwelling organisms are expected to be insignificant regardless of which of the alternative sites is used for dredged material disposal.
- Potential impacts to bottom-dwelling organisms are considered significant at either of the considered alternative sites. However, the area of impact is expected to be greater at the 7-mile site due to the greater footprint of disposed dredged material at this site. The 7-mile site would require a four-square nautical mile site to contain the footprint of the disposal mound within the site boundaries compared to a one square nautical mile site for the 4-mile site. In addition, disposal of dredged material on the low relief limestone hard bottom within the southern half of the 7-mile site would likely result in a change from a hard bottom to a soft bottom benthos.
- Designation of the 4-mile site would require significantly less consumption of resources (e.g., fuel, federal dollars) than the 7-mile site for transportation of dredged material for disposal.
- Designation of the 4-mile site would result in significantly less air emissions from the disposal vessel than the 7-mile site.
- Monitoring of the 4-mile site would be less costly and less difficult than monitoring the 7-mile site due to the 7-mile site's greater depths and distance from shore.

## **3.0 AFFECTED ENVIRONMENT**

### **3.1 General Environmental Setting**

This section contains a description of the existing environment that may be affected by the disposal of dredged materials at the proposed ODMDSs. This information serves as a basis for projecting environmental impacts that could result from the disposal of dredged material in these regions of the Atlantic Ocean. The information presented in this section was synthesized from both literature and field evaluations.